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On the NATURE *and* LIMITS *of* CERTAINTY *and* PROBABILITY. *By the Reverend* GEORGE MILLER, *F. T. C. D and M. R. I. A.*

Read May 4, 1793.

THE raſh and unſucceſsful efforts which bold ſpeculators have made in metaphyſical enquiry have brought diſcredit upon every attempt to examine the firſt principles of human knowledge. The ſober part of mankind, alarmed at the perplexities which have generally been the reſult of ſuch enquiries, withdraw their attention from every diſquiſition profeſſing to be metaphyſical as from a fruitleſs purſuit. If this perſuaſion operated univerſally, perhaps no very bad conſequences would follow from it; but whilſt the ſincere friends of truth ſhun the direct enquiries of metaphyſics, they are leſs prepared to eſcape from the ſubtleties with which the ſceptic endeavours to enſnare them, or the errors into which in their own reſearches they may ſometimes be betrayed. It becomes neceſſary, therefore, to eſtabliſh principles by which they may be directed, and the authority of Lord Bacon ſhould encourage us to hope that

that the attempt is not impracticable. In his Novum Organum he cautions us againſt being diſcouraged by the failure of phyſical experiments, obſerving that a negative ſometimes brings more light than an affirmative inſtance. The errors and perplexities of metaphyſicians are the *negative inſtances* of metaphyſics. They inform us in what caſes the powers of the human mind have failed, and perhaps it may appear that this attempt to aſcertain the limits of thoſe powers derives from them an experimental confirmation.

To enquire into the original, certainty and extent of human knowledge, together with the grounds and degrees of belief, opinion and aſſent, was the purpoſe of the celebrated Locke, and in the proſecution of it he has made many valuable obſervations; but it cannot be ſurprizing that in his early eſſay there ſhould be ſome deficiencies which a century of philoſophic reſearches might enable us to ſupply. His general plan ſeems to be right, but ſome parts of it appear to be erroneous, and others to want the diſtinctneſs neceſſary for their application. In the ſecond claſs of probable propoſitions he has placed *the manner of operation in moſt parts of the works of nature* (book iv. chap. 16); and yet I believe upon examination it will be found that *the manner of operation* does not enter into any of the probabilities which he has mentioned as examples, and that it lies beyond the reach even of conjecture. He has been deficient in not giving with ſufficient diſtinctneſs a general deſcription of all thoſe propoſitions in which demonſtrative

ſtrative certainty is unattainable, and in not pointing out the cauſe which in thoſe propoſitions renders certainty hopeleſs. He alſo appears to have been erroneous in his favourite poſition, that moral truths are capable of ſtrict demonſtration.

To ſupply this want of diſtinctneſs, and to correct theſe errors, I would divide all our enquiries into three claſſes; the firſt of which ſhould comprehend all thoſe in which our ideas are compared together, without being conſidered as connected by the relation of cauſe and effect, but merely regarded as independent objects of thought, correſponding in ſome particulars which enter into the compoſition of each idea; the ſecond ſhould include thoſe in which a conſideration of the relation of cauſe and effect is directly or indirectly involved, limited however to the mere fact of their connection, and not extending to the nature of that connection or *manner of operation*; and the third ſhould conſiſt of enquiries into the nature of cauſes or the manner of operation.

By the word *cauſes* I mean not only phyſical but moral cauſes, without pretending to determine the quantity of the influence of the latter. If motives are allowed to have any influence, it is ſufficient to entitle them to be placed amongſt cauſes. Of thoſe three claſſes the firſt appears to me to be the region of demonſtrative certainty, the ſecond to be that in which probability alone is attainable, and the third to be that of abſolute ignorance. In this diviſion they have been

arranged in what ſeemed the moſt natural order; but as the conſideration of the third claſs will point out the circumſtance which renders certainty unattainable in the ſecond, it will be convenient to examine thoſe two claſſes in a contrary order.

WHEN we compare two ideas without conſidering them as being connected by the relation of cauſe and effect, but merely regarding them as two independent objects of thought, it is obvious that in many caſes we may be capable of diſcovering with certainty their agreement or diſagreement. Thus the mathematician may with certainty diſcover that a triangle correſponds in extent to a rectangle of the ſame altitude, and whoſe baſe is half of that of the triangle, or that they are equal. Each idea is a certain modification of extenſion, and he may diſcover that they correſpond as to the quantity of that extenſion.

PROBABILITY is not however excluded from propoſitions compoſed of ideas in this manner compared. The propoſition, whoſe truth might be eſtabliſhed by demonſtration, may be received on teſtimony; and a mathematician, when inveſtigating the conſtruction of a geometric problem, is guided by the probability of the exiſtence of various relations ariſing from the reſemblance which the caſe bears to others in which ſuch relations have been known to exiſt.

THIS

THIS claſs has been illuſtrated only by a mathematical example; and I believe that it would be difficult to produce an inſtance of complete demonſtrative certainty, containing any thing more than verbal information, which belonged to any other department of human knowledge *. Locke was indeed deſirous of convincing his readers that morality was capable of demonſtration; but he does not appear to have eſtabliſhed this favourite principle. He has ſpoken in general of our relation towards God as a foundation on which moral rules might be built; but even though mankind ſhould agree in the principle of obligation, a ſubject which has wearied and exhauſted controverſy, the detail of moral duties muſt neceſſarily involve a complicated conſideration of the motives and conſequences of human actions, that is, of the operation of phyſical and moral cauſes. This principle then, though admitted, would be of little importance unleſs the operation of cauſes were within our cognizance. He has not been more ſucceſsful in his examples than in his general obſervations. *Where there is no property there is no injuſtice*, and, *No government allows abſolute liberty*, are, as Paley has already obſerved, merely verbal propoſitions; for the notion of injuſtice ſuppoſes the exiſtence of

 property,

* Mr. Hume has in a note on the ſixth ſection of his Enquiry concerning Human Underſtanding, propoſed a middle claſs of arguments, which he calls proofs, meaning ſuch arguments from experience as leave no room for doubt or oppoſition. This diſtinction may, as he ſays, *conform our language more to common uſe*; but ſuch arguments philoſophically conſidered are only of the higheſt degree of probability, and are ranked as ſuch by Locke.

property, and that of government is a reſtriction of abſolute liberty. But though moral rules are not poſſeſſed of that ſtrict and abſolute certainty which ſeems to be the pre-eminent diſtinction of mathematical ſpeculation, they are yet founded on an aſſurance ſo ſtrong that their proofs have been ſometimes miſtaken for demonſtrations. If there be any other part of human knowledge beſides the mathematical ſciences which can claim the privilege of demonſtration, it muſt be logic. The relations of abſtract reaſoning may be of ſuch a kind as that the mind may be certain of their truth, ſince no conſideration of cauſe and effect is involved. Metaphyſics however muſt be excluded; they are really a branch of natural philoſophy conſidered in an extended ſenſe; they are the natural philoſophy of the mind.

AGREEABLY to the plan already mentioned, the third claſs of inquiries ſhall now be conſidered. This claſs, which conſiſts of inquiries into the nature of cauſes or their manner of operation, is moſt flattering to the pride of the underſtanding; but whether we conſult reaſon or experience we ſhall have little inducement to hope that this pride could be gratified by the reſult of ſuch inquiries. Thoſe who think that all the operations of nature are performed immediately in conſequence of the determination of the Divine Will, and that God literally *upholdeth all things by the word of his power*, will not make an inquiry which ſuppoſes a communicated efficiency. Thoſe, on the other hand, who think that he has communicated efficiency to the created world, will perceive,

perceive, if they reflect for a moment, that effects alone lie within our cognizance. By our ſenſes we diſcover that a change has happened in our own bodies, or in thoſe by which they are ſurrounded; and by the faculty of perception we perceive that an idea is preſent to the mind; but in neither caſe does any circumſtance ſuggeſt to us the manner in which the effect has been produced. We may in either caſe obſerve a continued ſeries of effects happening in a regular order, which may induce us to conjecture that they are connected amongſt themſelves as cauſes and effects; but however probable ſuch a conjecture may be, ſince it is founded merely on the obſervation of the order in which one follows another, there is not any circumſtance which can guide us to any conjecture concerning the nature of that connection.

NATURAL philoſophers do indeed enquire into the laws according to which forces act, but the law of a force does not point out its manner of operating. The law only tells us what variety there would be in the effect in conſequence of a certain variety in the circumſtances under which the cauſe operated. Thus the law of gravity is, that one body is attracted by another with a force inverſely as the ſquare of the diſtance. This only tells us that the quantities of the effects produced by the unknown cauſe called gravity, at different diſtances, are inverſely as the ſquares of thoſe diſtances.

SIR Iſaac Newton has ſuggeſted that the gravitation of bodies is probably the effect of the repulſion of a very ſubtil elaſtic fluid.

fluid. Repulſion is hereby ſubſtituted in the place of attraction, but repulſion and attraction, as to the manner of operating, are equally unknown. I would not, however, be thought to undervalue ſuch a diſcovery. Though it could not give us any conception of the nature of the active cauſe, it would unfold to us a new and comprehenſive analogy of effects, by tracing to one common cauſe effects which appear to be of the moſt oppoſite natures.

We are equally in the dark with reſpect to moral and intellectual agency. That operation of the mind which is called conſciouſneſs will not give us in this reſpect any aſſiſtance towards the diſcovery of the nature of our own minds, or of the operation of moral cauſes. The operation of conſciouſneſs may be diſtinguiſhed into two parts. The one is merely a perception that the mind is actually thinking, and this is, as Locke obſerves, eſſential to thinking. This is evidently a mere perception that certain ideas or combinations of ideas are preſent to the mind, and conſequently does not give us any intimation of the powers by which they had been introduced. In the other part the mind is more active, it being a deliberate ſurvey which the mind makes of its own operations, but it is only a recollection of the train of ideas previouſly perceived for the purpoſe of obſerving their order and conjecturing their connection. In neither application does the word conſciouſneſs imply any obſervation of the mode of operating. It is in the one the preſent perception of each effect when it happens, in the other the recollection of a ſeries of effects in the order in which they had happened. However,

ever, as in the material, ſo in the intellectual world, ſuch obſervations of the connection of effects are of conſiderable importance. Though we cannot penetrate the eſſence of the mind, and diſcover how it thinks, we may learn many uſeful leſſons with regard to the conduct of our underſtandings and the regulation of our paſſions; as in the material world we may diſcover methods of rendering the powers of nature ſubſervient to our convenience, whilſt their manner of operating is wholly unknown.

Had attention been given to this diſtinction we might perhaps have eſcaped the intricate inquiries for which metaphyſics have been ſo diſtinguiſhed. The queſtions concerning matter and ſpirit and human liberty appear to belong to the claſs of inquiries into the nature of cauſes or their manner of operating, which baffle the reſtleſs curioſity of human ſpeculation. Perhaps, however, this obſervation may be retorted, and it may be ſaid that Doctor Prieſtley, who has lately revived them, has ſufficiently ſhewn that thoſe ſubjects do not lie beyond our comprehenſion. It will, therefore, be neceſſary to aſſign reaſons for the purpoſe of proving the arguments alleged by Doctor Prieſtley to be inconcluſive.

To his argument, in proof of the Materiality of the Soul, I will content myſelf with oppoſing Berkeley's argument in favour of Spirit. Such is our ignorance of cauſes that we are incapable of diſcovering any eſſential diſtinction amongſt them. If we begin by acknowledging Matter, we are led by the ordinary rules of reaſoning

reaſoning to conclude with Doctor Prieſtley, that all cauſes are material. If we begin by acknowledging Spirit, we are led to conclude with Berkeley, that all cauſes are ſpiritual or immaterial. Nor let it be thought that theſe two metaphyſicians, ſetting out from different points, meet in one concluſion. Doctor Prieſtley does indeed exclude Solidity from his idea of Body; but this, however it may facilitate conviction, by removing the objection of the ſuppoſed imcompatibility of ſolidity and thought, as properties of the ſame ſubſtance, does not by any means appear eſſential to his argument. Beſides, he aſcribes efficiency to beings incapable of thought, and to thinking beings he aſcribes other powers beſides that of thinking or ſuggeſting ideas.

With regard to the queſtion of Human Liberty, Doctor Prieſtley's argument appears to reſt intirely upon the mere ſuppoſition of the truth of a principle the oppoſite to that which I have endeavoured to eſtabliſh, namely, that the ſubject is within the reach of the human underſtanding; ſince he ſupports the doctrine of neceſſity only by the impoſſibility of maintaining that of free-agency. If this ſhould appear to be the ſtate of the argument, it cannot be uſed to prove that very ſuppoſition.

In the ſecond ſection of his Illuſtrations of Philoſophical Neceſſity, he ſays, that to evade the force of his great argument of cauſe and effect, it is ſaid, "that though in a given ſtate of "mind two different determinations may take place, neither of "them can be ſaid to be without a ſufficient cauſe; for that "in this caſe the cauſe is *the mind itſelf*, which makes the deter-"mination in a manner independent of all motives." This, which

which Doctor Prieſtley introduces as an argument uſed to evade the force of reaſoning by which the doctrine of philoſophical neceſſity had been maintained, is really the ſtatement of the opinion of thoſe who embrace the doctrine of free-agency; and until it ſhall have been overturned no deciſive progreſs can have been made in the eſtabliſhment of the oppoſite doctrine. On this point then the whole queſtion turns. What is Doctor Prieſtley's anſwer? "That the mind itſelf, independent of the "influence of every thing that comes under the deſcription of "motive, bearing an equal relation to both the determinations, "cannot poſſibly be conſidered as a cauſe with reſpect to either "of them in preference to the other; becauſe, excluſive of what "may properly be called motive, there is no imaginable dif- "ference in the circumſtances immediately preceding the deter- "minations. Every thing tending to produce the leaſt degree "of inclination to one of the determinations more than the "other muſt make a difference in the ſtate of mind with reſpect "to them, which by the ſtating of the caſe is expreſsly ex- "cluded; *and I will venture to ſay that no perſon, let his bias in "favour of a ſyſtem be ever ſo great, will chuſe to ſay in ſupport "of it that the mind can poſſibly take one of two determinations "without having for it ſomething that may at leaſt be called an "inclination for it in preference to the other*; and that inclination, "or whatever elſe it be called, muſt have had a cauſe producing "it in ſome previous affection of the mind." I will not, indeed, chuſe to ſay that the mind can take one of two determinations without being itſelf determined by ſome preceding circumſtance, becauſe I will not chuſe to aſſume the queſtion of the freedom of the will; but I do not ſee that, becauſe I decline to aſſume

the truth of one ſide of this queſtion, Doctor Prieſtley is therefore authorized to aſſume the oppoſite. This argument of cauſe and effect is, he ſays, *the great and moſt concluſive argument* for his doctrine. To what does it amount? The queſtion is fairly ſtated, and if in this dark and doubtful conteſt no metaphyſician boldly maintains the doctrine of free-agency, the victory of philoſophical neceſſity is at once proclaimed. Were the enquiry commenſurate to the human underſtanding this would be a fair appeal to the common ſenſe of mankind; but I have already aſſigned a general reaſon for thinking that all enquiries into cauſes are beyond our comprehenſion.

It may poſſibly be thought that this is an enquiry only into the *connection* of cauſes and effects, ſince it only propoſes to determine whether the operation of moral cauſes is neceſſary or contingent, and that it therefore is reducible to the claſs of thoſe in which probability is attainable; but the argument of Doctor Prieſtley is derived from a general conſideration of the nature of the human mind, and not from any experimental obſervation of facts. Not that I think ſuch obſervation could ſupport his ſyſtem; even though it were certain that man is a free-agent, he could not have any experimental proof of his freedom, ſince he could not know by experience that he could in any inſtance have acted in a manner different from that in which he then choſe to act. Since therefore a free-agent could not by experience diſcover his freedom, it cannot be proved from experience that a being acts neceſſarily. Experience muſt in both caſes be the ſame, and therefore cannot eſtabliſh the truth of either.

Mr. Hume has defended the doctrine of neceſſity on a ground different from either of thoſe which have been mentioned: He is of opinion " that men begin at the wrong end of this queſtion " when they enter upon it by examining the faculties of the " ſoul," and propoſes to determine it by an obſervation of the general conduct of mankind. " It is," he ſays, " univerſally " acknowledged that there is a great uniformity among the " actions of men in all nations and ages, and that human na- " ture remains ſtill the ſame in its principles and operations. " The ſame motives always produce the ſame actions; the ſame " events follow from the ſame cauſes." Hence he contends that there is the ſame conſtant *conjunction* in the voluntary actions of men and in the operations of mind as in the material world, and we are therefore required to acknowledge the ſame neceſſity in the one as in the other. In anſwer to this it muſt be obſerved, that the caſe oppoſed by Mr. Hume to that of ſtrict neceſſity is a total diſregard to motives, but this is a caſe for which the advocates of liberty do not contend. They allow that motives do very generally influence the conduct of mankind, and only maintain that the mind has a power of reſiſting and rejecting them: They do therefore acknowledge *that there is a great uniformity among the actions of men*; and Mr. Hume himſelf admits that " it is poſſible to find ſome actions, which ſeem to " have no regular connection with any known motives, and are " exceptions to all the meaſures of conduct which have ever " been eſtabliſhed for the government of men." For theſe anomalous caſes Mr. Hume does indeed endeavour to account, by ſaying, that as in the material world a philoſopher concludes that " a ſeeming uncertainty in ſome inſtances proceeds from the

" the ſecret oppoſition of contrary cauſes," he muſt, if he be conſiſtent, " apply the ſame reaſoning to the actions and voli-
" tions of intelligent agents." This, however, appears to be merely what logicians call *begging the queſtion.* The queſtion is, whether human actions are regulated by the ſame neceſſity which connects material cauſes and effects? The proof is, that we ought to argue about the former on the ſame principle as about the latter. But Mr. Hume ſeems conſcious that he had in this inſtance unfairly begged the queſtion, for in the words immediately following he renounces his advantage by giving up the queſtion: " Or even," he ſays, " when an action, as ſometimes
" happens, cannot be particularly accounted for, either by the
" perſon himſelf or others, we know, in general, that the cha-
" racters of men are, to a certain degree, inconſtant and irregular.
" This is in a manner the conſtant character of human nature;
" though it be applicable in a more particular manner to ſome
" perſons who have no fixed rule for their conduct, but proceed
" in a continued courſe of caprice and inconſtancy." In theſe words he appears to me to abandon his firſt principle, that *the ſame motives always produce the ſame actions*; to acknowledge that there is in all, but more particularly in ſome men, an inconſtancy of character which renders it impoſſible to account for their conduct in all caſes, and conſequently to leave the queſtion of neceſſity in its original uncertainty.

THE doctrine of liberty has lately been maintained by Doctor Gregory, who has undertaken to eſtabliſh it, by proving, on phyſical and mathematical principles, that the doctrine of Neceſſity is abſurd. The doctrine of Neceſſity, as he has ſtated it, he has, I think,

think, clearly refuted; but he has not ſtated it in the ſame manner with Doctor Prieſtley. He ſuppoſes that when a number of motives are preſent to the mind, each ſhould, if the doctrine of Neceſſity were true, have its determined effect, and he ſhews that the reſults ariſing from their combinations would not be ſuch as are obſerved to happen. In page 600 he ſays, " let the *manner* " of the *conjunction* of cauſe and effect in phyſics be ſuppoſed as " different as poſſible from the *manner* of the *conjunction* of mo- " tive and action; only let the conjunction in both relations be " *conſtant*, and the whole of my reaſoning from the dilemma and " axioms to the laſt inference muſt remain unſhaken, and all my " concluſions will be found ſuch as may be tried experimentally." If then this be not ſuppoſed by the advocates of Neceſſity, the reaſoning of this writer is by his own conceſſion without foundation. It, I think, appears from Doctor Prieſtley's treatiſe, that he regarded all the conſiderations preſent to the mind as forming *one motive*, and that to this collective view he attributed the neceſſary determination of the will. The queſtion, therefore, on which he argues is, whether the mind can, in the ſame combination of circumſtances, form different determinations, whilſt the queſtion on which Doctor Gregory argues is, whether it is not abſurd to conceive that in every combination each diſtinct conſideration ſhould be connected with a correſponding effect. That Doctor Prieſtley did not conſider each diſtinct motive as connected with its correſponding action, will, I think, appear from the following paſſages.

In the firſt ſection of his treatiſe on the doctrine of Neceſſity he ſtates his opinion in theſe words: "I maintain that there is ſome "fixed law of nature reſpecting the will as well as the other "powers of the mind, and every thing elſe in the conſtitution of "nature; and conſequently, that it is never determined without "ſome real or apparent cauſe foreign to itſelf, i. e. without ſome "motive of choice, or that motives influence us in ſome definite "or invariable manner, *ſo that every volition or choice is conſtantly "regulated and determined by what precedes it*; and this conſtant "determination of mind, according to the motives preſented to "it, is all that I mean by its neceſſary determination." And in the ſixth ſection he ſays, "If we always chooſe that object or "that action, which, on whatever account, appears preferable at "the moment of making the choice, it will always be determined "by ſome invariable rule depending upon the ſtate of the mind "and the ideas preſent to it; *and it will never be equally in our "power to chooſe two things, when all the previous circumſtances "are the very ſame.*" In the ſecond ſection he ſays, that "to "eſtabliſh the concluſion defined in the preceding ſection, nothing "is neceſſary but that, throughout all nature, the ſame conſe-"quences ſhould invariably reſult *from the ſame circumſtances*. For, "if this be admitted, it will neceſſarily follow, that at the com-"mencement of any ſyſtem, ſince the ſeveral parts of it, and "their reſpective ſituations, were appointed by the Deity, the firſt "change would take place according to a certain rule eſtabliſhed "by himſelf, the reſult of which would be *a new ſituation*; after "which, the ſame laws continuing, another change would ſuc-"ceed, according to the ſame rules, and ſo on for ever; *every new*

"*ſituation*

" *ſituation invariably leading to another*, and every event, from the " commencement to the termination of the ſyſtem, being ſtrictly " connected; ſo that, unleſs the fundamental laws of the ſyſtem " were changed, it would be impoſſible that any event ſhould " have been otherwiſe than it was." In the ſame ſection he expreſsly calls the collective view of all the conſiderations ſuggeſted to the mind the motive. " In every determination of " mind, or in caſes where volition or choice is concerned, all the " previous circumſtances to be conſidered are, the ſtate of mind " (including every thing belonging to the will itſelf) and the views " of things preſented to it; *the latter of which is generally called* " *the motive*, *though under this Term ſome writers comprehend them* " *both*." And he expreſſes himſelf in the ſame manner in the following page: " A particular determination of mind could not " have been otherwiſe than it was, if the laws of nature reſpect- " ing the mind be ſuch *as that the ſame determination ſhall con-* " *ſtantly follow the ſame ſtate of mind and the ſame views of things*." And in the fourth ſection he ſays, " whenever any perſon makes " a choice, or comes to any reſolution, there are two circum- " ſtances which are evidently concerned in it, viz. what we call " the previous diſpoſition of the mind with reſpect to love or " hatred; for example, approbation or diſapprobation of certain " objects, &c. and the ideas of external objects then preſent to " the mind, that is, *the view of the objects* which the choice or " reſolution reſpects." Doctor Gregory, as the reſult of his argument, has determined, that a motive is not a phyſical cauſe impelling a man to act, but *that for the ſake of which* a man acts; and

and conſidered this as the diſtinction between the doctrines of Neceſſity and Liberty; but Doctor Prieſtley has ſpoken of it as a diſtinction wholly unimportant, according to his notion of Neceſſity. In the ſecond ſection he ſays, " No leſs fallacious is it to " ſay that motives do not impel or determine a man to act; but " that a man, from the view of the motives, determines himſelf " to act." And in the fourth ſection he ſays, " Every volition is " nothing more than a deſire, viz. *a deſire to accompliſh ſome end*, " which end may be conſidered as the object of the paſſion or " affection." In the following words he has guarded againſt any miſtake which might ariſe from his compariſon of the mind to a balance. " It is acknowledged that the mechaniſm of the balance " is of one kind and that of the mind of another, and therefore " it may be convenient to denominate them by different words; " as for inſtance, that of the balance may be termed a *phyſical*, " and that of the mind a *moral mechaniſm*. But ſtill if there be " a real mechaniſm in both caſes, *ſo that there can be only one* " *reſult from the ſame previous circumſtances*, there will be a real " neceſſity, enforcing an abſolute certainty in the event."

Mr. Hume has not expreſſed himſelf with ſo much clearneſs as Doctor Prieſtley; but his ambiguity renders his opinion equally ſecure from the attacks of Doctor Gregory, ſince his expreſſions are at leaſt equally applicable to the opinion of Doctor Prieſtley as to that which Doctor Gregory has controverted. In his Eſſay on Liberty and Neceſſity he ſays, that the inferences concerning human actions " are founded on the experienced union of like ac-

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" tions with like motives, inclinations and circumſtances." In the beginning of his Eſſay he had ſaid, that " the ſame motives " always produce the ſame actions;" but he afterwards explains this aſſertion. " We muſt not," he ſays, " however expect that " this uniformity of human actions ſhall be carried to ſuch a " length as that all men in the ſame circumſtances will always act " preciſely in the ſame manner, without making any allowance " for the diverſity of characters, prejudices and opinions."

THE greateſt efforts in metaphyſical inquiry appear then, by the difficulties in which they are involved, to give confirmation to the opinion, that the nature of cauſes and their manner of operating are hid from us in impenetrable obſcurity. The attempts made by Doctor Prieſtley and Mr. Hume to eſtabliſh the doctrine of Neceſſity, have, I imagine, been ſhewn to belong to that claſs of inconcluſive reaſoning which logicians denominate *Petitio Principii*, and Doctor Gregory's attempt to overthrow it to belong to the claſs called *Ignoratio Elanchi*; whilſt on the queſtion of Materialiſm Doctor Prieſtley and Biſhop Berkeley refute each other by contradictory arguments. Between this claſs of inquiries and that in which we are capable of arriving at certainty lies the claſs of mere Probability. In this middle claſs all the practical, and conſequently all the immediately uſeful, knowledge of mankind is to be found. Mathematical ſpeculations and the abſtract rules of logical reaſoning may boaſt the high privilege of abſolute certainty, but they are only uſeful as far as they are capable of being applied to human actions; and in this application the mind of man muſt be content with an aſſurance of leſs ſtrength.

THE ſecond claſs I defined to be that in which a conſideration of the *connection* of cauſes and effects is directly or indirectly involved. That where ſuch a connection is the object of inquiry probability only is attainable, is a direct inference from what has been mentioned with regard to the third claſs If we are wholly ignorant of the nature of all cauſes and their modes of operating, we cannot be in any caſe certain of the connection of effects with each other, or with thoſe cauſes to which they are aſcribed.

MR. HUME has indeed, from this principle, drawn a much more extenſive concluſion. From our ignorance of the *nature* of the connection of cauſe and effect he has inferred, that we cannot reaſon about the *exiſtence* of ſuch a connection; and that our ſuppoſition of its exiſtence is only the reſult of a cuſtomary tranſition of the mind from the one object to the other. This inference, which is the foundation of his ſcepticiſm, is ſupported by the following argument. Between theſe two propoſitions *I have found that ſuch an object has always been attended with ſuch an effect*, and *I foreſee that other objects, which are, in appearance, ſimilar, will be attended with ſimilar effects*, the connection is not intuitive. There is therefore required a medium which may enable the mind to draw ſuch an inference, if indeed it be drawn by reaſoning and argument. But there is not any ſuch medium, ſince the idea of ſuch a connection cannot be ſuggeſted by any ſingle inſtance, and there is nothing, in a number of inſtances, different from any ſingle inſtance which is ſuppoſed to be exactly ſimilar, except only that after a repetition of ſimilar inſtances the mind is carried by habit, upon the appearance of one event, to expect

expect its uſual attendant, and to believe that it will exiſt. In anſwering this argument all that is neceſſary is to produce that medium which he declared paſſed his apprehenſion. It, I think, conſiſts of two propoſitions. The former is that *thoſe things which begin to exiſt have not an independent exiſtence*; the latter, *thoſe things which do not exiſt of themſelves, or independently, muſt derive their exiſtence from ſome other things*. Theſe two abſtract principles are to me ſelf-evident. *Perpetuity of exiſtence* is inſeparably connected with *Neceſſity of exiſtence*; and the notion of *derived exiſtence* is inſeparably connected with the notion of that which is not *neceſſary*. The former is the principle of the firſt propoſition, the latter of the ſecond. We muſt therefore acknowledge that every thing which begins to exiſt has derived its exiſtence from ſome other being as its cauſe. This has, indeed, been acknowledged by Mr. Hume himſelf. " It is," he ſays, " univerſally " allowed that nothing exiſts without a cauſe of its exiſtence."

IGNORANT as we are of the nature of cauſes, we are, indeed, unable to determine whether all Effects ſhould be aſcribed immediately to the firſt cauſe; or whether, by the appointment of that firſt cauſe, there has been eſtabliſhed a connection between created things. On the latter ſuppoſition we might conclude that there is a real *connection*, where we have obſerved an uniform *conjunction*; but even on the firſt we are authorized to infer the probability of a ſimilar conjunction of effects in ſimilar caſes yet unobſerved by us. It is agreeable to the opinion, that all things derive their exiſtence immediately from one great author, to believe that there ſhould be a ſimplicity and uniformity in this continued ſyſtem of creation.

THE probability of any particular inference on either ſuppoſition will be proportioned to what we conceive to be the extent of our obſervation of the analogies of nature. Mr. Hume has ſaid, that if any intricate or profound argument be produced, it is in a manner giving up the queſtion, becauſe it ſhould be obvious to the capacity of an infant; but, though the former ſuppoſition be indeed too profound, the latter has no abſtruſeneſs, except what it derives from the abſtract form in which it has been propoſed; and other maxims, which, expreſſed abſtractedly, would be as difficult to an infant, are yet readily admitted in their application. It would not be eaſy to convince an infant that *the whole is greater than a part*, and yet he would not find any difficulty in a particular inſtance. But if after even this abatement it ſhould ſtill be thought too difficult, there is not any reaſon why we ſhould not ſuppoſe that the infant is influenced by the acknowledged principle of the aſſociation of ideas; and that what in him is aſſociation is in the man aſſociation corrected and ſtrengthened by reaſoning.

THIS claſs, which has for its object the connection of cauſes and effects, evidently contains all the enquiries of natural philoſophy; and what has been ſaid under the firſt head of the diviſion has, I ſuppoſe, made it appear that morality is alſo compriſed within it. It remains to be ſhewn that it includes thoſe propoſitions which are ſupported by the evidence of teſtimony, or which relate to the computations of chance.

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ALL enquiries with regard to teſtimony may be reduced to two heads: In proportion as we are ſatisfied that a witneſs has not been influenced by any deſire of deceiving, and has not himſelf been deceived, we give credit to his teſtimony. The examination then by which we eſtimate the credit due to teſtimony conſiſts of two parts, and if it ſhall appear that each is a conſideration of the *connection of cauſe and effect*, it will be allowed that all propoſitions whoſe credit reſts upon teſtimony are rightly claſſed.

WHEN we wiſh to determine whether a witneſs has been influenced by a deſire of deceiving, we conſider what motives could have induced him to wiſh to deceive us, or whether the means which he employed could promiſe him ſucceſs in a ſcheme of deception. The former conſideration is evidently an enquiry into the operation of motives, that is, of moral cauſes on his mind; and the latter will, I think, appear after a little conſideration to be an enquiry of the ſame kind, though ſomewhat more complicated. An enquiry into his judgment of the probability of his ſucceſs, is an enquiry into the operation of a view of the circumſtances in which he was placed, conſidered as a motive which ſhould determine him in the formation of his plan of action. It is therefore an enquiry of the ſame kind. It is however a more complicated enquiry, becauſe it is made for the purpoſe of enabling us to form a judgment of his judgment of his ſituation. He deliberates about the operation of motives on the minds of others in diſpoſing them to concur with his ſcheme or to oppoſe it; but we, from our view of his ſituation, deliberate about the expectation which he muſt have entertained

entertained concerning the probability of concurrence or oppoſition. When, on the other hand, we would determine whether a witneſs has been himſelf deceived, we conſider the ſtate of his mind at the time when he ſuppoſed the fact, of which he has given teſtimony, to have happened. This again is a conſideration of the influence of moral cauſes. I cannot give a fuller illuſtration of what I have ſaid than by referring to Lord Lyttleton's celebrated Obſervations on the Converſion of Saint Paul, from which indeed this diviſion of the enquiry into the credibility of a witneſs has been taken. It is not at all neceſſary to my purpoſe that the queſtion of human liberty ſhould be examined. That motives have ſome influence on the mind will not be denied by thoſe who maintain its freedom, and the deficiency of their influence muſt be ſupplied by the ſelf-determining power of the mind, which is a cauſe whoſe manner of operating is equally remote from our comprehenſion.

Doctor Campbell, in his very able Examination of Mr. Hume's Eſſay on Miracles, has contended "that teſtimony hath "a natural and original influence on belief antecedent to ex- "perience," and in the ſenſe in which he has aſſerted this propoſition it appears to be true. Teſtimony has an influence on belief *antecedent to inferences from the conduct of others*, but this influence is founded on the conſciouſneſs which a child has of his own veracity. When he does not ſpeak for enquiry, he ſpeaks to communicate his own ideas. Subſequent experience of the conduct of others may teach him that the noble gift of ſpeech is ſometimes abuſed, or he may learn the ſame leſſon of diſtruſt from the artifices which he himſelf is ſometimes induced to adopt; but the original and genuine uſe of ſpeech he feels

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is to communicate the real thoughts of his mind. The credit of teſtimony is therefore founded on our original experience of our own veracity, though our eſtimates of it are afterwards corrected by an enlarged view of the general conduct of mankind.

THE probabilities of chance are included within this general deſcription of probability. Doctor Reid has very properly obſerved, " that we attribute ſome events to chance, becauſe we " know only the remote cauſe which muſt produce ſome one " event of a number, but know not the more immediate cauſe " which determines a particular event of that number in pre- " ference to the others." This he has illuſtrated by obſerving, " that in throwing a juſt die upon a table we ſay it is an equal " chance which of the ſix ſides ſhall be turned up, becauſe " neither the perſon who throws, nor the by-ſtanders, know the " preciſe meaſure of force and direction neceſſary to turn up " any one ſide rather than another." Eſſay 7. ch. 3. The eſtimate of chance appears therefore to be founded in a conſideration of the connection of cauſe and effect. When we are unable to diſtinguiſh thoſe circumſtances of the cauſe which will determine the event in a particular manner, we proceed as if all the events which might poſſibly ariſe from the ſame general cauſe, acting in various circumſtances, were equally probable, and make our computation merely from the number. The example mentioned by Doctor Reid belongs to that claſs of probable propoſitions which relates to the operation of phyſical cauſes. If the ſubject of computation were the contingency of human conduct it would belong to the claſs of moral cauſes.

BEFORE I conclude this eſſay, I would remark a peculiarity in the probability of teſtimony which ſeems to add to it conſiderable force: This peculiarity is derived from the ſucceſſive nature of the acts of the mind. In the material world cauſes and effects co-exiſt; and as we conjecture the connection between them only from their correſpondence, it may frequently be difficult to determine to which of two co-exiſting objects we ſhould aſcribe an effect. The queſtion concerning phlogiſton, as ſtated in Nicholſon's Firſt Principles of Chemiſtry, may afford an example of ſuch a difficulty. " The great queſtion," according to this writer," now is, whether inflammable air be con-
" tained in all combuſtible bodies, ſince they do not all emit it
" by mere heat; and it is evident, that if combuſtion can be
" effected without it in any one inſtance, it cannot be the in-
" diſpenſable and univerſal principle of inflammability. Its
" exiſtence is denied in ſulphur, phoſphorus, charcoal, metals,
" and ſome other ſubſtances. It may however be obtained by
" heating thoſe if water be preſent: *whether it is afforded by the*
" *ſubſtance under examination, or by the water, is therefore the ſubject*
" *of controverſy.*" Book 2. ſec. 1. chap. 2. In the operations of the mind this ambiguity cannot prevail in the ſame degree. We judge of the connection of moral cauſes and their effects by their order of ſucceſſion, and as the mind cannot at the ſame time give conſiderable attention to more than one motive, we are not liable to much ambiguity in our obſervation of the tendency of that motive; beſides, though in ſome caſes ſeveral motives may conſpire to influence the mind to the ſame determination, yet in others they operate ſeparately. In thoſe other caſes we may learn the natural tendency of thoſe motives, and we may apply the reſult of thoſe obſervations in caſes more complicated

complicated. We conclude for inſtance that in a certain caſe the conſideration of pecuniary intereſt has had a certain influence on the mind, becauſe no other motive appeared in that inſtance to be preſent to the mind, and we could ſcarcely miſtake in attributing the effect to the *ſingle* cauſe with which it appeared to have connection. In like manner we conclude that the hopes of credit or power, and the deſire of gratifying paſſion, produce certain tendencies, and that different ſtates of mind diſpoſe men variouſly with regard to the reception of truth. It were eaſy to ſelect from the ſacred writings examples of ſuch caſes. This peculiarity in the operation of moral cauſes appears to give conſiderable force to concluſions concerning their influence in particular caſes, and to balance any diſadvantage which might ariſe from our inability to determine the queſtion of their neceſſary operation. If we could aſcertain that moral cauſes act neceſſarily, this ſucceſſive nature of the operations of the mind might perhaps in ſome caſes, not too much complicated, enable us to arrive at certainty; but as I conceive that this queſtion is beyond the limits even of probable conjecture, I conclude that the credit of teſtimony can never riſe above probability. Our ignorance of the nature of all cauſes, moral as well as phyſical, muſt baniſh ſtrict and abſolute certainty from every enquiry into the material or intellectual world.

I HAVE now finiſhed what I propoſed; and if it ſhall appear that I have more accurately deſcribed the nature and boundaries of certainty and probability, and diſtinguiſhed both from that region into which the human mind is unable to penetrate, I

ſhall think that I have done ſome ſervice to the cauſe of truth; if I have failed, this eſſay will only be one *negative inſtance* more, and may with others ſerve to guide ſome future experimenter.